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(54) Title: TEST SYSTEM

(57) Abstract: An assay is provided for assaying a sample of soil, sand, sediment or other particulate material for the presence of contaminants such as polycyclic aromatic hydrocarbons (PAHs), organic pesticides, petroleum hydrocarbons, or polychlorinated biphenyls (PCBs), and preferably comprises: extracting an assayable amount of the contaminant from the particulate material into a water-miscible solvent, such as an organic alcohol, capable of dissolving the contaminant, the solvent optionally containing a surfactant; mixing the resultant solvent solution of the contaminant with water and optionally a surfactant, for example to a dilution factor between about 10 and about 25, whereby a mixture is obtained containing water, solvent, surfactant and any extracted contaminant; and exposing the bioluminescent organism *Vibrio fischeri* to the mixture under conditions in which the inhibition, by the contaminant, of light emitted by the organism can be related to the presence of the contaminant in the mixture. The method is sufficiently quantitative that it can be determined whether the contaminant is present in the particulate material at a concentration above or below a certain - e.g. a legally specified - level. A test kit is provided, whereby the method can be performed in the field and the result showing whether the contaminant is present at a legally acceptable or unacceptable level can be displayed.